

REMARKS

In the Office Action of January 29, 2003, claims 1-15 stand rejected. By this amendment and reply, claims 1, 6 and 14 are amended. Reconsideration and allowance of all pending claims are respectfully requested in view of the following remarks. No new subject matter is being added by this Amendment.

IN THE CLAIMS

I. CLAIM REJECTIONS.

A. 35 U.S.C. § 102(b).

Claim 14 stands rejected under 35 U.S.C. 102 (b) as anticipated by U.S. Patent No. 3,824,434 to Kawakami ("Kawakami"). The Examiner argues that Kawakami discloses a multi-layer structure comprised of three or more layers where at least one layer comprises a single ion conducting layer and one comprises a polymer layer. Specifically, the Examiner asserts that the conductor layer, semi-conductor layer and the insulating layer of the Kawakami patent are the three layer structure of the present invention and that each of these layers conduct lithium ions and thus are single ion conducting layers. The Examiner also argues that the insulating of the Kawakami patent is the polymer layer. Applicants respectfully traverse.

In order to sustain a rejection under 35 U.S.C. § 102(b), each and every element as set forth in the claim must be found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 528, 631 (Fed. Cir. 1987). Indeed, "the identical invention must be shown in as complete detail as is contained in the.... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1235 (Fed. Cir. 1987). Because the claims of the present invention contain elements not found in *Kawakami*, this rejection must fail.

Claim 14, as amended, recited in part "wherein at least one of said three or more layers comprises a non-electrically conductive single ion conducting layer and at least one of the said three or more layers comprises a polymer layer." Therefore, claim 14, as amended, requires that at least one of the layers in the multi-layer structure be a non-electrically conductive single ion conducting layer and at least one of the layers be a polymer layer. Kawakami fails to disclose such a structure.

As discussed in Kawakami's specification, the conductor layer and semi-conductor layers are electrically conductive layers. For example, Kawakami's specification discloses that the conductor layer or semi-conductor layer is used to create an electrical path, which causes a short circuit to prevent dendrite growth (Col. 24, lines 17-23). Also, the materials listed as possible conductor layer materials are electrically conductive materials. (Col. 24, lines 38-41). The materials disclosed for the semi-conductor layer are also electrically conductive (Col. 24, lines 51-54). The semi-conductor layer is discussed as having similar properties of the conductor layer, but with lower conductivity (Col. 24, lines 44-50). Therefore, claim 14, as amended, contains at least one element not found in Kawakami; therefore, claim 14, as amended, is in condition for allowance.

B. 35 U.S.C. § 103.

To establish a prima facie case of obviousness under 35 U.S.C. § 103, three requirements must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. M.P.E.P. 2143.

1. Kawakami in view of Skotheim.

Claims 1, 3, 4, 10 and 12 stand rejected under 35 U.S.C. 103(c) as being unpatentable over Kawakami in view of U.S. Patent No. 5,529,860 to Skotheim. Applicants respectfully traverse this rejection.

Considering claim 1, the Examiner argues that Kawakami discloses all the limitations of claim 1 except for an electroactive sulfur containing cathode, which, the Examiner asserts, can be found in Skotheim.

As discussed previously, Kawakami fails to disclose, teach or suggest that in the multi-layer structure at least one layer is a non-electrically conductive single ion conducting layer and at least one layer is a polymer layer. The conductor layer and the semi-conductor layer of Kawakami are electrically conductive layers. Thus, Kawakami fails to disclose teach or suggest "wherein at least one of said three or more layers comprises a non-electrically conductive single

ion conducting layer and at least one of said three or more layers comprises a polymer layer.”
The addition of Skotheim does not solve the shortcomings of the Kawakami patent. Therefore, claim 1 is in condition for allowance.

Claims 3, 4, 10 and 12 are all dependent on allowable claim 1. Therefore, claims 3, 4, 10 and 12 are allowable.

2. Kawakami in view of Skotheim in view of Bates.

Claim 2 stands rejected as unpatentable over Kawakami in view of Skotheim and further in view of U.S. patent No. 5,569,520 to Bates (“Bates”).

Claim 2 depends from allowable claim 1, therefore claim 2 is allowable.

3. Kawakami in view of Skotheim in view of JP ‘357.

Claims 5 and 6 stand rejected as unpatentable over Kawakami in view of Skotheim and further in view of Japanese Patent JP 08-279357 (JP ‘357).

Claim 5 discloses, in part, that the “multi-layer structure comprises four or more layers.” The Examiner asserts that while this limitation is not found in the Kawakami/Skotheim combination, it can be found in JP ‘357. The Examiner’s argument is the addition of the metal layer of JP ‘357 to the teachings of Kawakami and Skotheim would provide a four layer structure. Because the Examiner misapplies JP ‘357, Applicant respectfully traverses this rejection.

The abstract of JP ‘357 indicates that the metal layer is formed on the cathode, not anode (Metal is ... stuck on a surface of a lithium transition metal composite oxide being a positive electrode material.) A copy of the translated abstract from the JP ‘357 as retrieved from the Japanese Patent Office Website is included as an attachment. JP ‘357 does not disclose combining a metal layer with an anode side multi-layer system. Thus, this rejection must be withdrawn and claim 5 is in condition for allowance.

Claim 6, as amended, recited in part “formed between the non-electrically conductive single ion conducting layer and the polymer layer.” As discussed previously, JP ‘357 indicates that the metal layer is formed on the surface of the cathode. Thus, the addition of JP ‘357 does not teach or suggest the limitation of claim 6. Indeed, even if the metal layer was formed on the surface of the anode the resulting combination of Kawakami/Skotheim/JP ‘357 would not teach

or suggest “said metal layers is formed between a single ion conducting layer and a polymer layer.” Therefore, claim 6 is in condition for allowance.

Additionally, claims 5 and 6 depend from allowable claim 1. Therefore, claims 5 and 6 are allowable.

4. Kawakami in view of Skotheim in view of Bates II.

Claims 7 and 8 stand rejected as unpatentable over Kawakami in view of Skotheim and further in view of U.S. Patent No. 5,3114,765 to Bates (Bates II).

Claim 7 discloses that the single ion conducting layer comprises glass selected from a group of glasses and claim 8 discloses that the glass is lithium phosphorus nitride. The Examiner claims that Bates II teaches that single ion conducting layers (including LiPON) can be used as a barrier layer applied to the anode and that the barrier of Bates II can be added to the teachings of Kawakami and Skotheim. However, the Examiner’s argument is irrelevant because claims 7 and 8 do not disclose new layers but are limitations on from what materials the single ion conductive layer can be made. The Examiner never indicates that the layers in Kawakami could be made from the materials disclosed in claims 7 and 8. Indeed, if the conductor or semi-conductor layer were made from glass and specifically LiPON, they would not be electrically conductive and would not be able to prevent dendrite growth. The proposed combination would, therefore, impermissibly change the principle of operation of Kawakami. Therefore, claims 7 and 8 are in condition for allowance.

Additionally, claims 7 and 8 depend from allowable claim 1. Therefore, claims 7 and 8 are allowable.

5. Kawakami in view of Skotheim in view of Ying.

Claim 9 stands rejected as unpatentable over Kawakami in view of Skotheim and further in view of U.S. Patent No. 6,277,514 to Ying.

Claim 9 depends from allowable claim 1. Therefore, claim 9 is allowable.

6. Kawakami in view of Skotheim in view of JP ‘357.

Claim 11 stands rejected as unpatentable over Kawakami in view of Skotheim and further in view of JP '357. The Examiner argues that Kawakami and Skotheim discloses all of claim 11 except for an intermediate layer, which the Examiner claims is found in the abstract of JP '357.

Claim 11, recites, in part an intermediate layer "interposed between said first anode active layer and said multi-layered structure." A reading of the abstract of JP '357 reveals that the metal layer is formed on "a surface of lithium transition metal composite oxide being a positive electrode material." Thus, the layer is formed on the positive electrode or cathode. Thus, the proposed combination fails to disclose, teach or suggest all the limitations of claim 11.

Additionally, claim 11 depends from allowable claim 1. Therefore, claim 11 is allowable.

7. Kawakami in view of Skotheim in view of Koksberg.

Claim 12 stands rejected as unpatentable over Kawakami in view of Skotheim and in further view of U.S. Patent no. 5,387,479 to Koksberg.

Claim 12 depends from allowable claim 1, therefore claim 12 is allowable.

8. Kawakami in view of JP '357.

Claim 15 stands rejected as unpatentable in view of JP '357. The Examiner argues that while Kawakami does not disclose four or more layers, JP '357 discloses a metal layer formed on an anode and the combination provides for a four layer structure. Applicant respectfully traverses this rejection.

As discussed previously, the metal layer is formed on the cathode and not the anode. Thus, there is no teaching to combine a cathode coating (JP '357) with a multi-layer structure on the anode side (Kawakami). Claim 15, therefore, is in condition for allowance.

Additionally, claim 15 depends from allowable claim 14. Therefore, claim 15 is allowable.

C. DOUBLE PATENTING.

Claims 1, 2, 5-8 and 10-15 stand provisionally rejected under the judicially created doctrine of obviousness- type double patenting as being unpatentable over claims 1, 9, 11, 37,

AMENDMENT under 37 C.F.R. § 1.111
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38, 43, 45-50 and 57 of co-pending application No. 09/721,519. A terminal disclaimer will be submitted upon allowance of the above claims, in response to this rejection.

Claims 14 and 15 stand provisionally rejected under the judicially created doctrine of obviousness- type double patenting as being unpatentable over claim 1 and 6 of copending application No. 09/864,890. A terminal disclosure will be submitted upon allowance of the above claims in response to this rejection.

IV. CONCLUSION

For the foregoing reasons, the Application is believed to be in condition for allowance and favorable action is respectfully requested. The Examiner is invited to telephone the undersigned at the telephone number listed below if it would in any way advance prosecution of this case.

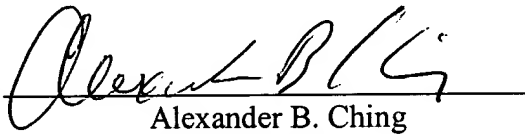
Applicants request a one month extension of time to extend the period of response from April 29, 2003 to May 29, 2003. Please charge the extension fee to Deposit Account No. 19-3878.

While no other fees are believed due, applicants hereby request that any other required fee to maintain pendency of this case, except for the Issue Fee, be charged to Deposit Account No. 19-3878.

Respectfully submitted,

May 29, 2003
Date

By



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